

# **EXHIBIT 21**

IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF NEW JERSEY

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IN RE: JOHNSON & JOHNSON TALCUM  
POWDER PRODUCTS MARKETING, SALES  
PRACTICES, AND PRODUCTS MDL NO:  
LIABILITY LITIGATION 16-2738 (FLW)(LHG)

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THIS DOCUMENT RELATES TO  
ALL CASES

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DEPOSITION UNDER ORAL EXAMINATION OF

SARAH E. KANE, M.D.

January 25, 2019, 9:19 a.m.

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REPORTED BY: JANET M. SAMBATARO, RMR, CRR, CLR

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1 separating out.

2 I've looked at the talcum powder product  
3 that women use on their perineum, what they  
4 bought off the shelf. I haven't looked at  
5 pharmaceutical-grade -- let me correct that --  
6 pleurodesis talc, for example. I have not looked  
7 at pleurodesis talc and ovarian cancer. I have  
8 not looked at any literature specifically on  
9 that. It's been the talcum powder products that  
10 women are buying off the shelf and using on their  
11 perineum.

12 Q. So if I told you that Johnson's baby  
13 powder starts out as pharmaceutical-grade talc  
14 and that, beyond that, fragrance is added, would  
15 it be the fragrance that you're taking issue with  
16 that you believe is causally associated with the  
17 development of ovarian cancer?

18 A. Again, I -- it's whatever is in that  
19 bottle. It could be platy talc, fibrous talc,  
20 asbestos, heavy metals, fragrance. It -- to me,  
21 it's the product, whatever the product is that  
22 they are using.

23 Q. And you have done a biologic  
24 plausibility analysis for fragrances, for metals,  
25 for asbestos, for fibrous talc, and for platy

1 talc --

2 A. So --

3 Q. -- each one of those constituents?

4 A. So I have looked at evidence -- so  
5 Dr. Crowley's report, I mentioned. I've looked  
6 at Dr. Longo's report. I've looked at Hopkins  
7 and the Pier charts from their depositions. I'm  
8 aware of evidence that these heavy metals and  
9 fragrances and asbestos are in there.

10 However, I haven't done -- what I know, I  
11 looked at the -- I've looked at some literature  
12 and I've looked at the IARC categorization of the  
13 heavy metals. I've looked at Dr. Crowley's  
14 report and I've done an extensive look at  
15 asbestos and ovarian cancer.

16 But, ultimately, those are just pieces of  
17 biological plausibility. What I'm mainly -- what  
18 I am opining about is the ultimate product. And,  
19 again, it can be platy talc, it can be fibrous  
20 talc, it can be asbestos, it can be heavy metals.

21 It's pieces of information that strengthen  
22 the plausibility. We know that asbestos causes  
23 ovarian cancer, that certain heavy metals are  
24 carcinogens, which the IARC categorized them as.  
25 So it's just -- it's just additional pieces of

1 information that strengthen the biological  
2 plausibility arm of it.

3 Q. Doctor, how do you arrive at a  
4 causation conclusion without a well-defined agent  
5 of exposure?

6 MR. ROTMAN: Objection.

7 Q. Do you understand what I'm asking you?  
8 How do you arrive at your causation and  
9 conclusion when you're not sure what it is about  
10 the talcum powder products that's actually  
11 biologically relevant?

12 A. Well, I think -- well, strike that.

13 The epi studies are looking at the product  
14 that the women are using. So that is the agent.  
15 It's the -- it's the total product. That is the  
16 agent.

17 So when you're looking through -- let me  
18 just -- so let's keep in mind that we're looking  
19 at that product.

20 And then if you go through my Bradford Hill  
21 analysis, you look at strength of association.  
22 And, overall, there's a consistent relative risk  
23 that's between 1 and 2. I would say it's, across  
24 studies, averaging 1.3 to 1.4 relative risk, and  
25 that's consistent across studies. That's the

1 an answer about the epi studies are looking at  
2 the product that the women are using, and you  
3 were talking about strength of association and  
4 then you said, "And that's consistent across  
5 studies. That's the consistency piece of it,"  
6 and then you were interrupted.

7 So were you done with your answer to  
8 that earlier question?

9 THE WITNESS: I can continue, because I  
10 think it's important.

11 I mean, I was -- my general causation  
12 opinion, the methodology I used was to answer the  
13 question: Does perineal application of talcum  
14 powder products, the, you know, baby powder  
15 product that you buy off the shelf, does that  
16 cause ovarian cancer? So it's whatever is in  
17 that bottle.

18 So with the methodology that I used,  
19 looking at the epi data, but also considering the  
20 Bradford Hill criteria -- which, you know,  
21 looking for specificity is another one. So most  
22 of the studies showed a stronger -- a strong  
23 association with serous ovarian cancer, but it  
24 was basically associated with epithelial ovarian  
25 cancer, so all groups of epithelial ovarian

1 cancer. It was pretty specific, the epi data,  
2 for that type of ovarian cancer.

3 Temporality. If you look at that, I  
4 mean, the case-control studies are retrospective  
5 reviews, so we know that they were using talc  
6 before their diagnosis of ovarian cancer.

7 Biological gradient. For those studies  
8 that looked at a biological gradient, there was  
9 an evident -- there was evidence of a  
10 dose-response, not all of the times statistically  
11 significant, but the trend -- you can see a trend  
12 of a dose-response across studies.

13 And then we get into the plausibility  
14 piece, which you've been discussing mostly so far  
15 in this deposition, which has to do with the  
16 plausible mechanism of talcum powder -- what I'm  
17 thinking of, talcum powder products -- whatever  
18 is in that bottle was what I'm looking at --  
19 talcum powder products causing -- the  
20 plausibility of it causing a chronic inflammatory  
21 response, leading to ovarian cancer. We've been  
22 discussing that quite a bit today.

23 And then coherence. So I can refer  
24 again to my report. Coherence, in this context,  
25 means coherence between epidemiologic and

1 generally accepted knowledge of the disease in  
2 question.

3 So we know that particles can reach the  
4 ovary. We know that talc can cause chronic  
5 inflammation. We know that chronic inflammation  
6 is associated with certain types of cancer. We  
7 know that certain types of ovarian cancer have  
8 shown association with chronic inflammatory  
9 conditions.

10 So, again, going through all this is  
11 experiment and analogy, experiment with the  
12 animal studies and the in vitro studies. And  
13 analogy, I used the example of asbestos, because  
14 even though asbestos is -- you know, asbestos is  
15 chemically similar, you can have asbestos fibers  
16 and talc fibers, but it's a similar mineral  
17 chemically, and we know that that is a  
18 carcinogen. So that's part of the analogy.

19 But, again, it's the whole picture. I  
20 mean, you look at the -- all of this data  
21 following my methodology and you apply the  
22 Bradford Hill criteria guidelines -- the Bradford  
23 Hill guidelines. And, looking at all that, my  
24 professional judgment is that the talcum powder  
25 products can cause ovarian cancer.



1 biology and inflammation, are you?

2 A. I am not currently participating in a  
3 study of oxidative stress or redox biology.

4 Q. You don't have any funding related to  
5 oxidative stress and inflammation, do you?

6 A. No, I do not.

7 Q. Have you ever applied for any funding  
8 in that area?

9 A. No. I have not.

10 Q. Have you ever authored a systematic  
11 review of the literature on oxidative stress and  
12 inflammation?

13 A. Oxidative stress and inflammation, no.  
14 I don't believe I have.

15 Q. Have you ever authored a systematic  
16 review of the literature on oxidative stress and  
17 cancer?

18 A. No. I have not authored a systematic  
19 review on that.

20 Q. Okay. Doctor, moving on to  
21 inflammation and ovarian cancer.

22 Generally, on inflammation, can you cite to  
23 a published experiment that was conducted in  
24 animals in vivo that establishes a role of any  
25 particular inflammatory cell or cytokine or